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Originals

A New Species of *Prunus* (Rosaceae) from the Tama Hills, West Tokyo, Japan

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A new species of cherry, *Prunus tama-clivorum* Oohara, Seriz. & Wakab., is described from the Tama Hills located in the western suburbs of Tokyo Prefecture. It is morphologically similar to *P. hisauchiana* Koidz. ex Hisauti, but differs from the latter in having triangular leaf teeth, reddish purple calyces with long tubes and subentire, triangular calyx-lobes with more or less incurved margin. It is a triploid with 2n = 24 and propagate by root suckers.

Key words: cherry, endangered plants, new species, *Prunus tama-clivorum*, Tama Hills.

Ten species of wild cherry are known from Japan (*Prunus* sect. Pseudocerasus) (Ohba 1989). Recently, we found an unusual cherry in the Tama Hills of Tokyo Prefecture. It occurs in an area 1 km east to west, and 1.6 km north to south, and is morphologically most similar to *P. hisauchiana* Koidz. ex Hisauti which also grows in this area. As a result of morphological, cytological and field observations, it was determined that this cherry represents a new species distinguishable from *P. hisauchiana*. We describe it here and provide the results of morphological and cytological observations and discuss briefly the origin of the new species, *P. tama-clivorum*.

Prunus tama-clivorum Oohara, Seriz. & Wakab., sp. nov [Figs. 1, 3]

Similis *Pruno hisauchianae* Koidz. ex Hisauti, sed ab hac foliis triangulariter duplicato-serratis, calicibus rubro-purpureis tubis longiore angustioreque cylindricibus, lobis triangulariter ovatis ad margine subintegris et plus minusve incurvis differt.

TYPE: JAPAN. Honshu. Tokyo Pref.: Matsuki-hinata green area, Campus of Tokyo Metropolitan Univ., Minami-ohsawa, Hachioji city, alt. ca. 130 m, 1 April 2003, fl., T. Oohara 14182, (MAK 347646–holotype; isotypes–TI, KYO, AICH, TYM).

Deciduous tree up to 12 m tall and 20 cm DBH, often bearing shoots from roots. Bark grayish brown, irregularly cracked, with sparse horizontal lenticels. Young branches ascending, 1–2 mm thick, grayish and almost glabrous. Leaves reddish brown when newly flushed, alternate and 0.5–3 cm apart on long shoots, but almost verticillate on short shoots. Petioles 1–1.5 cm long, covered with dense ascending or appressed hairs 0.2–0.5 mm long. Blades elliptic to ovate-elliptic, 4–8 cm long, 2.5–4 cm wide, acuminate at the apex, cuneate or broadly cuneate and usually with a pair of leaf glands at the base of the blade, deep green in upper surface, pale

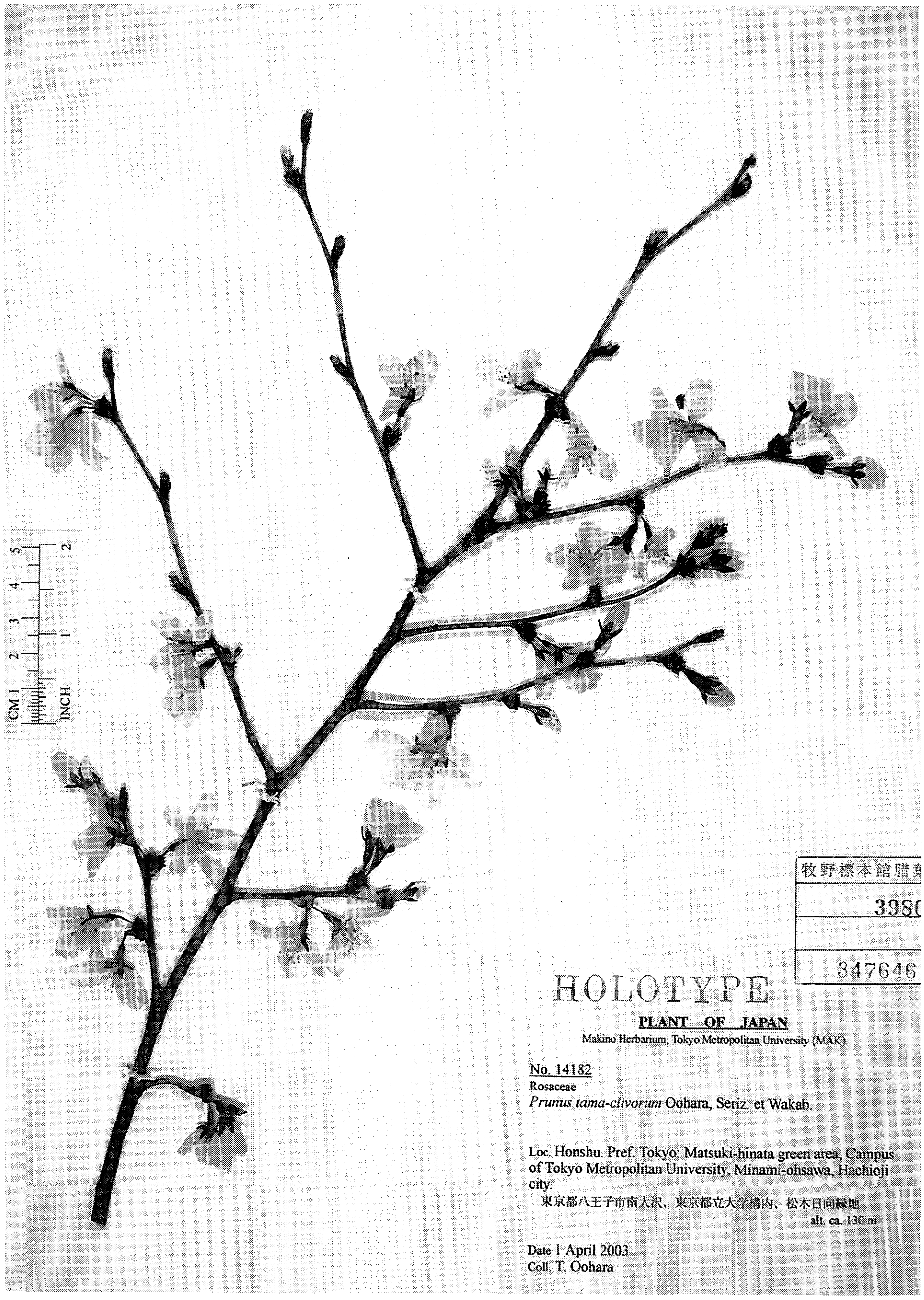
CM 1 2 3 4 5
INCH 1 2
牧野標本館腊
398
347646
HOLOTYPE
PLANT OF JAPAN
Makino Herbarium, Tokyo Metropolitan University (MAK)
No. 14182
Rosaceae
Prunus tama-clivorum Oohara, Seriz. et Wakab.
Loc. Honshu. Pref. Tokyo: Matsuki-hinata green area, Campus of Tokyo Metropolitan University, Minami-ohsawa, Hachioji city.
東京都八王子市南大沢、東京都立大学構内、松木日向緑地
alt. ca. 130 m
Date 1 April 2003
Coll. T. Oohara

Fig. 1. Holotype specimen of *Prunus tama-clivorum* Oohara, Seriz. & Wakab. (T. Oohara 14182, April 1, 2003, MAK)

green in lower surface, sparsely hairy on both surfaces and rather densely hairy along veins on lower surface, acuminately duplicato-serrate on the margin; large teeth obliquely triangular, with 1–4 smaller teeth. Flowers late March to early April, precocious, pendulous. Inflorescences axillary on branches of the previous year, 1- to 2-flowered; peduncles almost lacking; pedicels 9–13 mm long, with dense spreading hairs. Calyces dark red-purple; tubes cylindrical, 6.5–7.2 mm long, more or less swollen and 3.1–3.3 mm wide in the lower parts, with rather dense spreading hairs on the base, but almost glabrous or very slightly hairy above; lobes triangular-ovate, 3.5–3.8 mm long, 2.3–2.5 mm wide, more or less incurved and almost entire or with 1–6 irregular minute teeth on the margin, sparsely hairy. Corolla slightly campanulate, not completely flat at anthesis; petals 5, pale pink, elliptic and usually slightly inrolled at margin, 13–15 mm long, 9–11 mm wide, emarginate at the apex. Stamens 26–30, up to 8 mm long. Styles equal to upper stamens at apex, with 15–30 ascending hairs in the lower parts. Fruiting in May but rare, globose, 7–8 mm across, glabrous and black when mature, with pedicels 15–20 mm long; stones ca. 5 mm across and pale yellow.

Chromosome number: 2n = 24 (Fig. 2).

Japanese name: Hoshi-zakura (nov.).

Other representative specimens: Tokyo Pref. Hachioji city : Tree same as the type, 3 April 2003, fl., S. Serizawa 78439 (K, GH, TNS, MAK, AICH, TYM), 15 May 2003, fr., S. Serizawa 78618 (TI, KYO, TNS, MAK, AICH, TYM); Matsuki-hinata green area, Campus of Tokyo Metropolitan Univ., Minami-ohsawa, alt. ca. 140 m, 3 April 1992, fl., T. Oohara 852, (MAK), 22 March 2002, fl., T. Oohara 12070 (TYM); Lower edge of Shimizuiri green area, Minami-ohsawa, alt. ca. 130 m, 3 April 2003, fl., S. Serizawa 78443 (TNS, MAK, AICH, TYM), 13 May 2003, fr., S. Serizawa 78614, (TNS, MAK, AICH, TYM); Upper edge of Shimizuiri green area, Minami-ohsawa, alt. ca. 150 m, 3 April 2003, fl., S. Serizawa 78444 (K, US, L, GH, TI, TNS, KYO, KUN, MAK, AICH,TYM), 13 May 2003, fr., S. Serizawa 78611 (K US, L, GH, TI, TNS, KYO, KUN, MAK, AICH, TYM); Oodaira park, Minami-ohsawa alt. ca. 150 m, 22 March 2002, fl., T. Oohara & S. Serizawa 77771 (MAK), May 13 2003, fr., S. Serizawa 78609 (MAK, AICH, TYM). Machida city : Kataso-yato, Oyama-cho, alt. ca. 140 m, Apr. 5

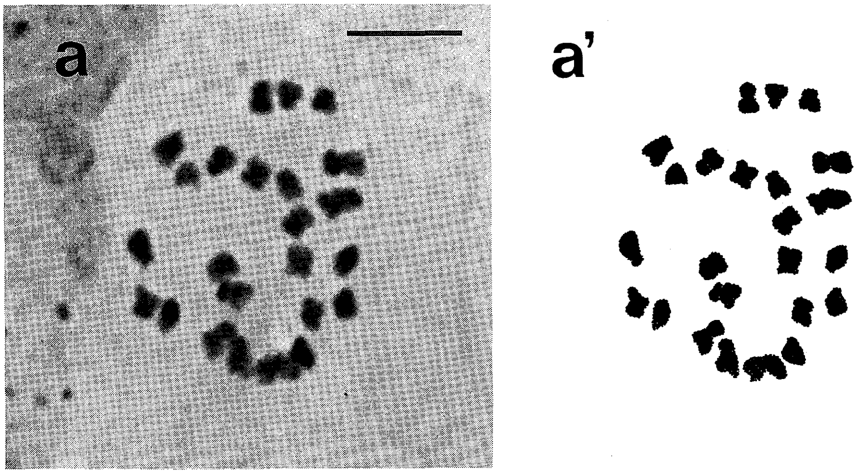

Fig. 2. Somatic chromosomes of *Prunus tama-clivorum* Oohara, Seriz. & Wakab. at metaphase. a. Photograph at metaphase, 2n = 24. a'. Drawing of photograph "a". Shoot apices in leafy bud at early spring were used for cytological study. The method of cytological observation follows Wakabayashi (1999).

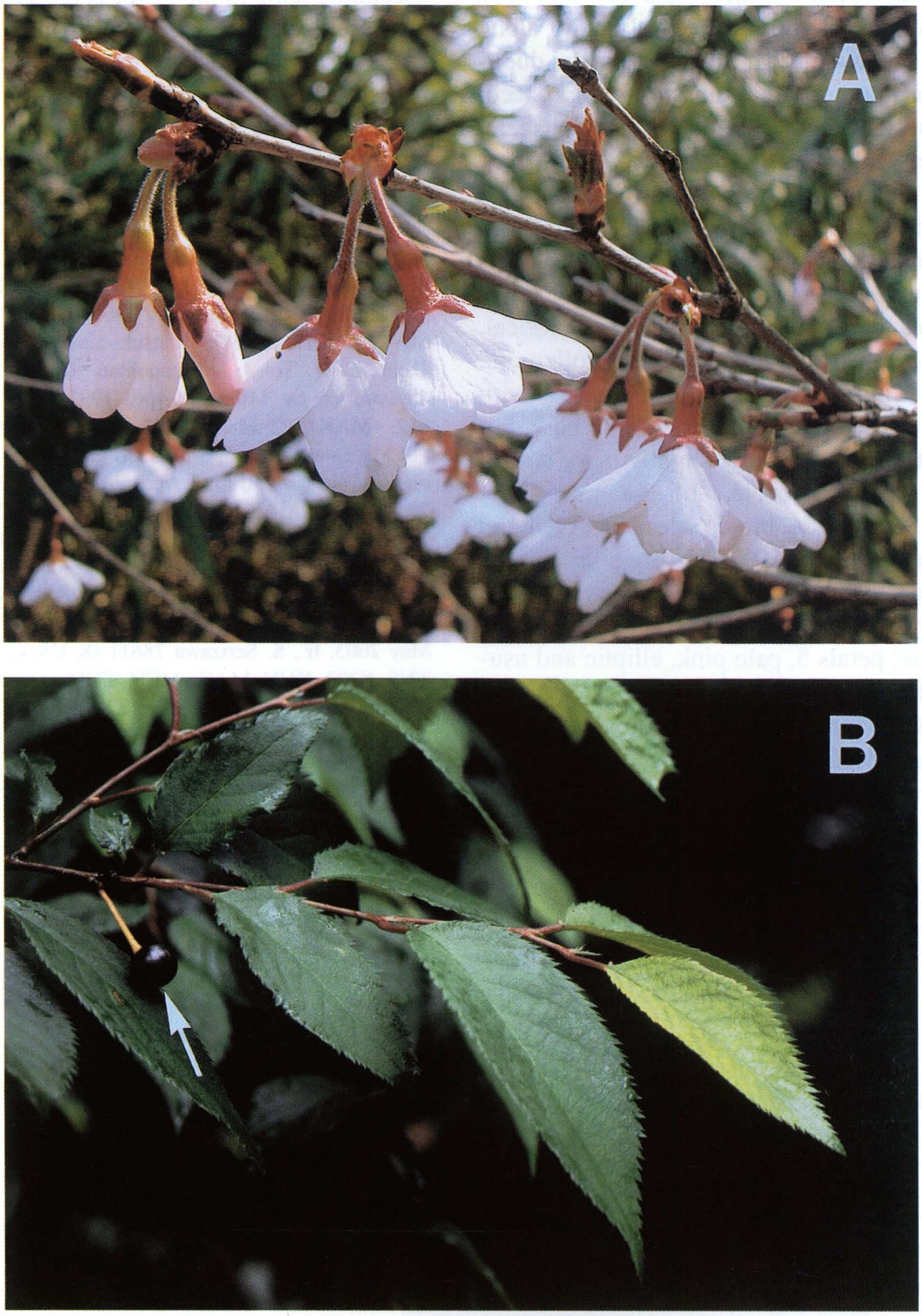

Fig. 3. Habit of *Prunus tama-clivorum* Oohara, Seriz. & Wakab. in Matsuki-hinata green area, Campus of Tokyo Metropolitan Univ., Minami-ohsawa, Hachioji city, Tokyo pref., alt. ca. 130m (Type tree). A. Flowers (Apr. 1, 2003). B. Leaves and a rare example of a fruit (drupe) (May 15, 2003). Arrow indicates the fruit.

2003, fl., H. Uchino s. n. (AICH), May 18 2003, H. Uchino s. n. (AICH).

Distr.: Japan. Tokyo Pref.: Hachioji and Machida cities.

Discussion

In its natural habitat, Minami-ohsawa in the Tama Hills, Tokyo, *Prunus tama-clivorum* often grows in close proximity to *P. hisauchiana*, *P. incisa* and *P. jamasakura*, in secondary deciduous forest. Of the species, *P. hisauchiana* shows the closest similarity to *P. tama-clivorum.* They share characters such as duplicato-serrate leaf margin, sparse hairs on both surfaces of leaves and dense, spreading hairs on the pedicels. *Prunus tama-clivorum*, however, differs from *P. hisauchiana* in having obliquely triangular teeth on the leaf margin (versus ovate or pentagonal teeth in *P. hisauchiana*) (Figs. 3B, 4A); sparsely hairy leaf margin (versus not hairy) (Fig. 4A); longer and narrower calyx tubes being 6.5–7.2 mm long and 3.1–3.3 mm wide (versus 4.8–5.5 mm long and 3.3–3.9 mm wide) (Fig. 4B); triangular-ovate, subentire and more or less incurvate calyx lobes (versus oval, remarkably serrate and flat) (Fig. 4C); conspicuously hairy styles (versus not or very slightly hairy) (Fig. 4B), elliptic and more or less inrolled petals (versus roundish or widely elliptic and flat) (Fig. 3A), and a slightly campanulate corolla (versus spreading and flat) (Fig. 3A). In addition, *P. tama-clivorum* flowers a few days later than *P. hisauchiana.* No intermediate individuals are found between the two.

Prunus tama-clivorum is also similar to the horticultural *P. subhirtella* Miq. 'subhirtella', from which it is clearly distinguished by large acuminate teeth on the leaf margin (versus shallow and acute teeth in *P. subhirtella* 'subhirtella') (Fig. 4A), pedicels covered with spreading hairs (versus ascend-

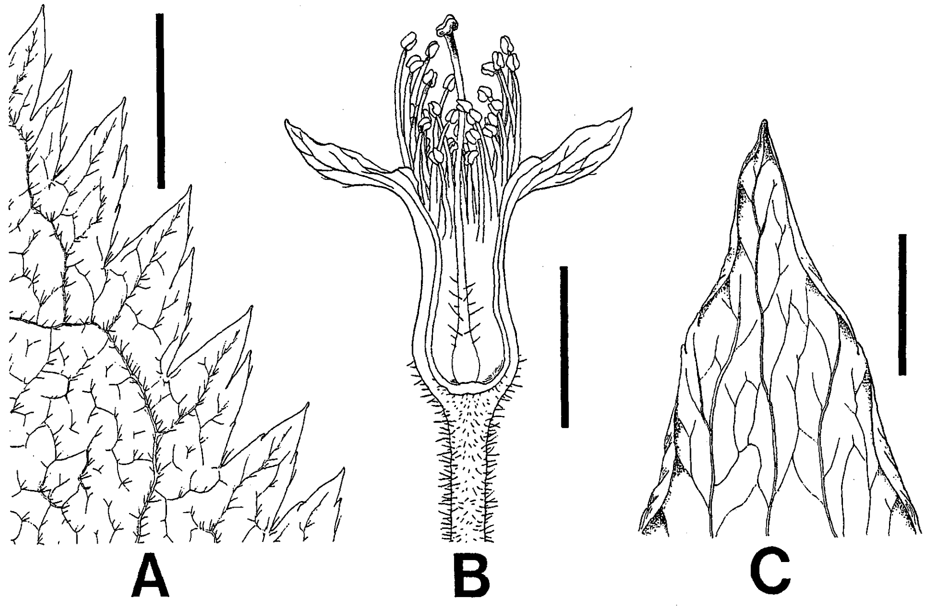

Fig. 4. Flower and leaf of *Prunus tama-clivorum* Oohara, Seriz. & Wakab. A. Leaf margin. B. Flower: petals and a part of calyx are removed. C. Calyx lobe. Bars indicate 5 mm in A and B, and 1 mm in C.

Table 1. Diagnostic characters of *Prunus tama-clivorum*, *P. hisauchiana* and *P. subhirtella* 'subhirtella'

Character	*P. tama-clivorum*	*P. hisauchiana*	*P. subhirtella* 'subhirtella'
Leaf			
Serration	deep and acuminate	deep and acuminate	shallow and acute
Shape of large tooth	obliquely triangular	ovate to pentagonal	obliquely triangular
Marginal hairs	sparse	absent	sparse
Flower			
Hairs of pedicels	spreading	spreading	ascending
Length of calyx-tubes	6.5–7.2 mm	4.8–5.5 mm	5.6–6.2 mm
Width of calyx-tubes	3.1–3.3 mm	3.3–3.9 mm	2.6–3.1 mm
Hairs on the upper part of calyx-tubes	nearly glabrous	sparse	sparse
Shape of calyx-lobes	triangular-ovate	ovate	ovate to triangular-ovate
Margin of calyx-lobes	subentire, more or less incurved	remarkably serrate, flat	serrate, more or less incurved in upper part
Hairs on styles	rather many (15–30)	absent or few (<10)	absent or few (<10)
Shape of corollae	slightly campanulate	spreading	almost spreading
Shape of petals	elliptic, more or less rolled inward	roundish to widely elliptic, flat	obovate, almost flat

ing hairs) (Fig. 4B), and calyx tubes nearly glabrous on the upper part (versus sparsely hairy) (Fig. 4B). The diagnostic characters of these three taxa are summarized in Table 1.

The somatic chromosome number of *P. tama-clivorum* is $2n = 24$ (Fig. 2). As the basic chromosome number of the genus *Prunus* is $x = 8$, this species is considered to be a triploid. Pollen grains vary considerably in size (25–35 μm across), and less stainable than those of most species of *Prunus*. Stainability by cotton blue is 43–52 %. Ripe fruits are rare, and we have observed no seedlings. Young plants found in the field are connected with roots of mother trees. This species, therefore, seems to reproduce mainly by root suckers.

Prunus hisauchiana has been regarded as a species with a cultivated origin from *P. incisa* and *P. spachiana* f. *ascendens*, or natural hybrid between them (Ohba 1989, 2001). *Prunus tama-clivorum*, which resembles *P. hisauchiana*, may have been derived in parallel from hybrid of the same parent combination as *P. hisauchiana*. In order to clarify that the two species may have such origin, molecular studies are strongly recommended.

Most parts of the distribution area of *Prunus tama-clivorum* have been turned into housing sites during the past twenty years. The individuals of this species are found only in four remaining green areas, namely, Matsuki-hinata green area, Shimizuiri green area, Oodaira park and Kataso-yato. In these green areas, this species has been shaded by other trees and *Pleioblastus chino* and has consquently decreased in number. In Matsuki-hinata green area, for example, only nine individuals were found in 2002, where these had been 20 individuals in 1992. The total number of wild individuals that now exist is probably less than 100. This species should be added to the list of endangered plants in Japan. Appropriate managements of the secondary deciduous forest will be necessary for the conservation of this spesies.

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大原隆明[a]，芹沢俊介[b]，若林三千男[c]：**多摩丘陵で見い出されたサクラ属の１新種**

東京西郊に位置する多摩丘陵からサクラ属の一種，*Prunus tama-clivorum* Oohara, Seriz. & Wakab. を記載した．この種は同所的に生育するヤブザクラに似るが，葉縁の大きな鋸歯は三角形状で，葉縁に毛が散生すること，萼は紅紫色で，筒部は細長く長さ6.5–7.2 mm，幅3.1–3.3 mm，萼片はほぼ全縁か不明瞭な低い１–６個の鋸歯があるのみで，辺縁がやや内側に巻き込むため三角形に見えること，花柱下部に15–30本の斜上毛があること，花弁は楕円形～長楕円形で平開せず，縁が多少内側に巻き込むことなどの点で異なっている．開花期もヤブザクラより数日遅い．また，観賞用に栽培されるコヒガンにも似ているが，葉縁の鋸歯は深く先端が鋭尖頭であること，小花柄の毛が開出すること，萼筒上部はほぼ無毛またはごくわずかに毛が散生する程度であることなどの点で異なる．和名は，５枚の萼裂片が星状に見えることから，ホシザクラと命名する．ホシザクラは３倍体であり，果実は稀にしか成熟せず，根に生じる不定芽によって繁殖する．ヤブザクラはしばしばマメザクラとエドヒガンの自然雑種に起源すると考えられているが，本種も同様の起源を持つ可能性がある．本種の生育地は近年宅地造成によって大きく改変されており，現存する野生個体は100以下と思われる．

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